Filter Replacement Instructions For 2950

Materials/tools required:

- Replacement filter set
- 1- Phillips screw driver
- 1- Flat blade screw driver
- sharp pick or pointed object

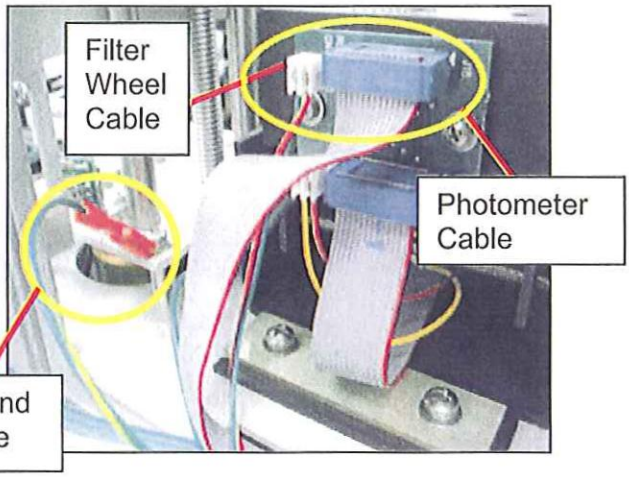
Step One

Disconnect the instrument from the AC mains and detach the power cord. Disconnect bottles. Remove the right side cover. Set the cover out of the way.

Step Two

- Locate the photometer.
- Note the location of the red marking for cable orientation before removing connector.
- Note the orientation of the harness cable and connector from the coprocessor board.
- Unplug the two upper cables from the photometer junction PCB.

- Disconnect Ground Cable
- Disconnect Photometer cable
- Disconnect filter wheel
- Photometer should pull right out



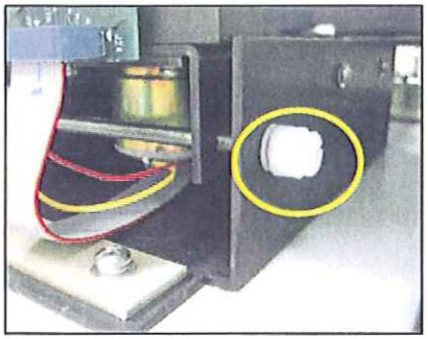
- Leave all other connections on this PCB alone.
- Unplug the ground wire at the red quick disconnect terminator located at the chassis end of the ground wire.
- Leave the two individual RED wires going to the lamp assembly attached.
- Remove the black corrugated air tube by pulling it from the gold colored tube coupler plate located on the instrument's back panel.

NOTE: DO NOT REMOVE THE RED LAMP WIRES from the photometer. Removing or altering other parts of the photometer will require the unit to be realigned. Do not move the lamp or the lamp bracket.

Step Three

Remove Photometer

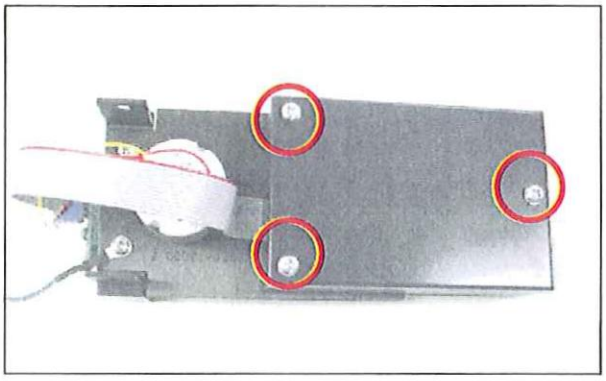
- First remove the lamp bracket screw (figure A)
- Pull lamp bracket straight up and pull out of way (hose may come out)



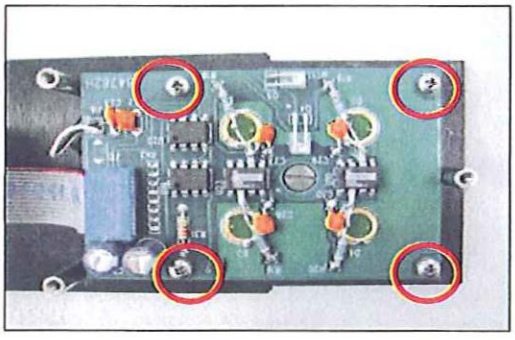
Retained in a mount assembly by a 4" long 10-32 pin

- Remove white nylon thumb screw and shaft
- Remove the retaining thread shaft by turning the white nylon end piece CCW

Step Four



- Turn Photometer over so the three screw heads are facing up
- Remove 3 screws from photometer cover to reveal photometer board
- Set the photometer cover aside.



- Remove 4 screws from photometer board to reveal filter wheel

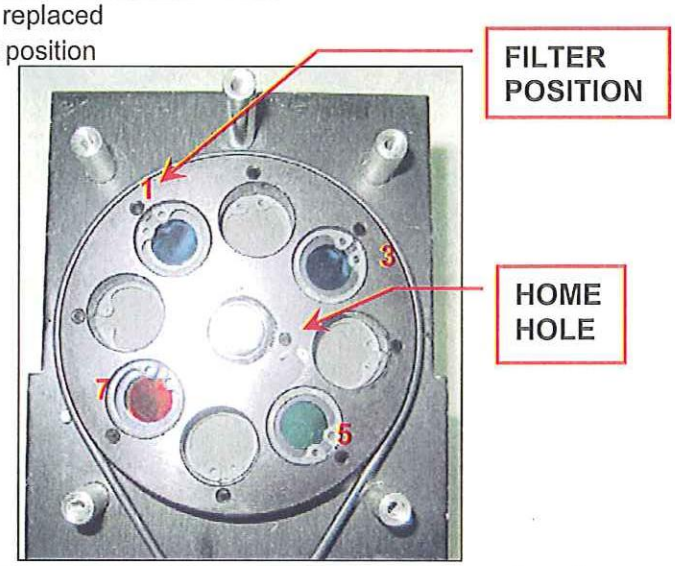
Note: Do not touch the components on the PCB especially the photo diodes and their windows. Do not let the filters get dirty, dusty, or contaminated. Note the orientation and position and in the case of filters, the wavelength of anything removed.

Step Five

Filter Wheel Part #: 996054

Pos/Script	Filter	Pos/Script	Filter	
1	405	5	492	Wheel
2	Block	6	Block	No.
3	450	7	630	1019
4	Block	8	Block	

- Locate filter being replaced
- Locate the correct position



- Using snap ring pliers, carefully remove the filter (see bottom figure)

Note: Be Careful not to touch or remove the filter Neutral

- Take new filter and place in filter wheel hole with the colored side facing up
- Reposition Snap ring using snap ring pliers (or similar tools)
- Compress snap ring with appropriate tool

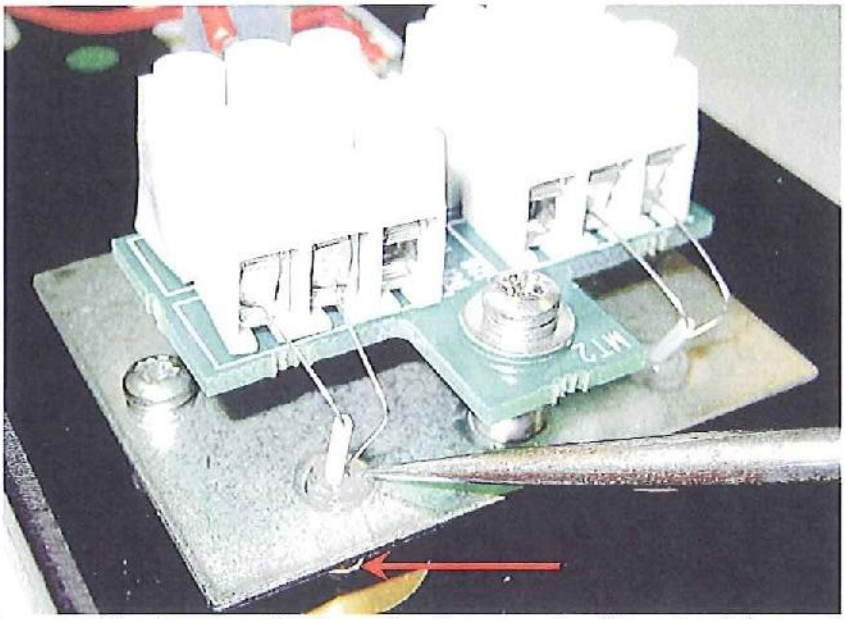
Step Six

- Install the photometer PCB and re-screw cover
- Reconnect the cables
- Refasten white nylon thumb screw 4" threaded shaft
- Refasten the lamp bracket screw
- Replace the side cover

Step Seven Filter Assignment	• Open the ChemWell Communications window. • Type **!FLTS** to display the current filter configuration • Type the command: **!AFLTpxxx** (where **p** is the position, and **xxx** is the new filter value). o **Ex:** !AFLT2570 will change the 630nm filter to a 570nm filter.
Step Eight Check Filter Voltages	• Type the command !RFLT • Make sure that the voltages for the newly installed filter are between 2 – 10 volts.

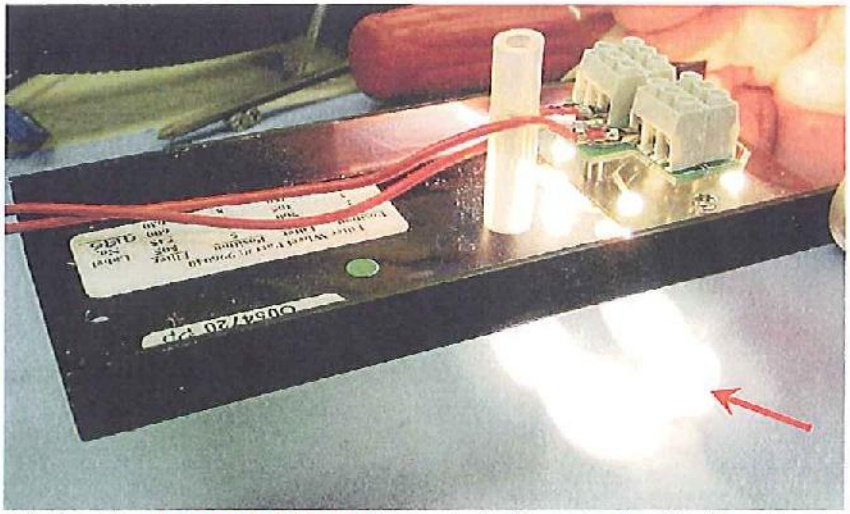
Lamp Alignment

Do not touch lamps with bare hands!

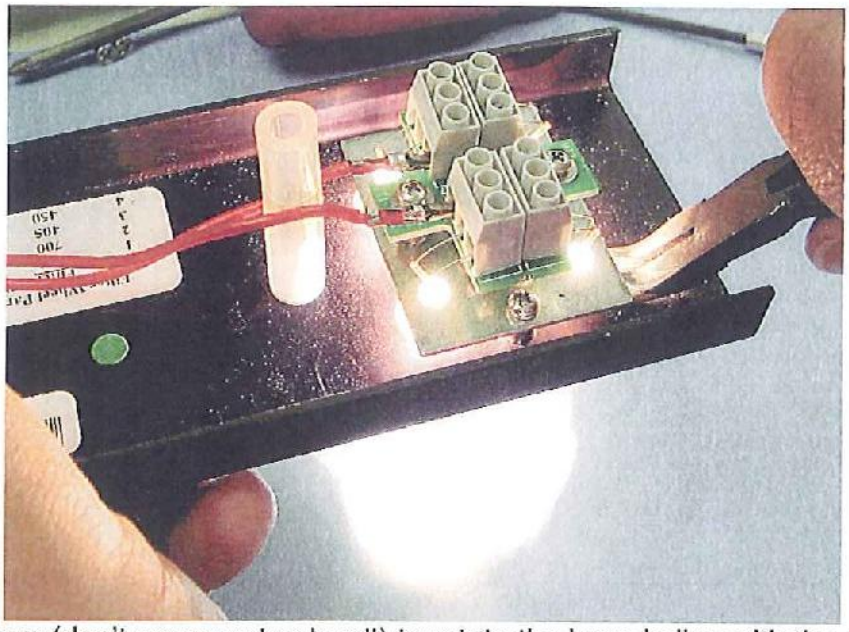


Push down on the lamp until it is as far down as it will go (so it is touching the aperture). This is critical for getting maximum output from the lamps.

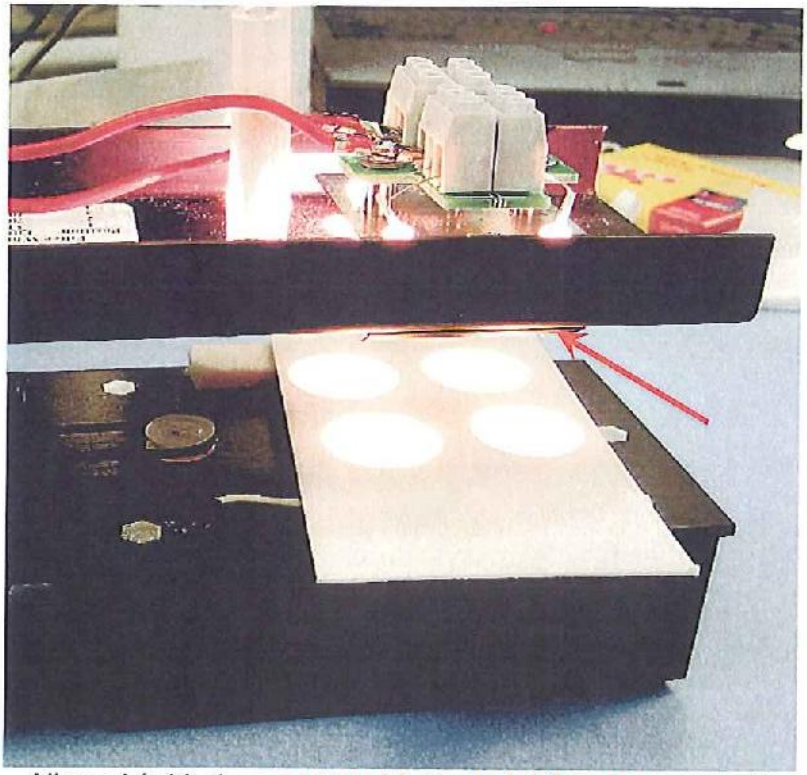
Conversely, if the Filter Volts are reporting too high (greater than 10V) you may need to lift the lamp up just slightly to bring the Filter Volts within specification.



Notice the lower right lamp is out of alignment with the others



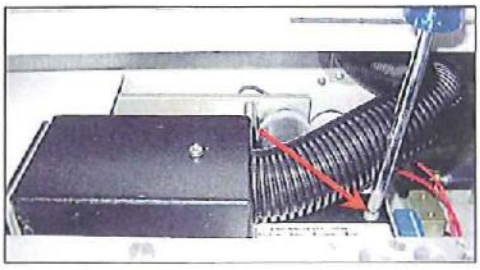
Use pliers (don't squeeze too hard!) to rotate the lamp in line with the others.



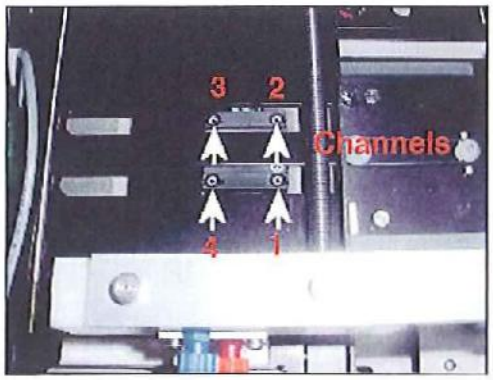
Aligned (with the aperture block and diffusers installed).

Filter Volts: Cleaning the Channel Block and Diffusers

If the Filter Volts are reporting Out of Range the first thing to check for is to ensure that the components of the photometry system are clean. If residue from a spill has reached the **Channel Block**, the obstruction would lower the Filter Volts readings. Periodic cleaning can also remove any dust or particulate matter that has settled onto the Channel Block's lenses over time.

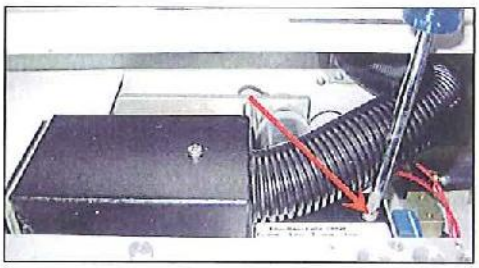


To gain visual access to all four channels, remove the screw holding the Lamp Bracket onto the Photometer Assembly and rest the Lamp Bracket out of the way. Move the Plate X mechanism out of the way by typing **PLXM0200** followed immediately by **IOFF** (to disable all automatic homing). Inspect the Channel Block Assembly for any residue or debris. Use isopropyl alcohol on a lint-free tissue to clean the four lenses on the Channel Block.

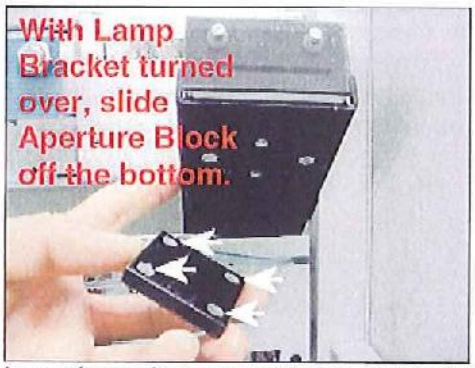


Once the lenses are clean, replace the screw holding the Lamp Bracket onto the Photometer Assembly. Go to the Utilities menu in ChemWell Manager and select Filter Voltages to recheck the readings.

The **diffusers** are located in the Aperture Block that is mounted to the underside of the Lamp Bracket Assembly. Dirty diffusers can block light and reduce Filter Volts readings. Conversely, if too much oil is applied to the Plate Y Lead Screw, it can fling up onto the diffusers and cause the Filter Volts readings to increase above the acceptable range of 10 volts.

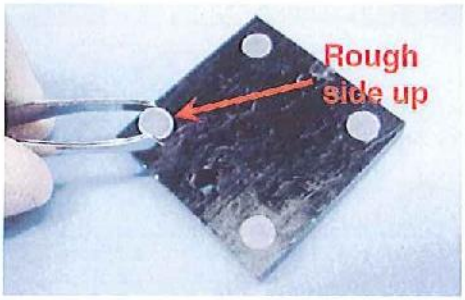


Remove the screw holding the Lamp Bracket onto the Photometer Assembly. Turn the Lamp Bracket over (as shown in bottom left picture) and remove the two screws that hold the aperture block in place. Note: Before separating the aperture block from the Lamp Bracket, turn the entire assembly back over, so that the Aperture Block is again on the bottom. Then slide the aperture block off the bottom of the Lamp Bracket.



*Careful that the vent tubing does not come loose from photometer during manipulation.

Remove the diffusers and clean them using lint-free tissue and isopropyl alcohol. Once clean, replace them with the rough side up and the smooth, shiny side down. Avoid getting any fingerprints on the diffusers.



Replace the Aperture Block on the Lamp Bracket Assembly: With the diffusers facing up, slide the Aperture Block onto the bottom of the Lamp Bracket Assembly. Holding the components together, turn the Lamp Bracket Assembly over and replace the two screws that hold the block onto the assembly. Ensure that the vent hose is still properly connected to the rear of the instrument and reconnect the Lamp Bracket to the Photometer Assembly. Go to the Utilities menu in ChemWell Manager and select Filter Voltages.

Performance Check Failure Checklist

ChemWell service personnel use the Performance Check job as a means to distinguish between problems caused by defective hardware from those caused by user error.
A Performance Check **failure** is defined as follows:

Type	CV Criteria
Unknown (18ul sample)	> 2%
Medium (10ul sample)	> 2%
Small (2ul sample)	> 3%

If running the Performance Check yields poor results, attempt the following steps:

- Recheck photometer alignment
- Recheck all other alignments
- Make sure table is sturdy and has not been bumped during test
- Separate reading repeatability from diluter/pipetting problems
- Check for diluter system leaks
- Check syringes for freedom of movement
- Check that probe tip is not partially bent or clogged
- Run bleach through system, followed by alcohol. Rinse well (re-primes system)
- Make sure mixer is operating properly
- Re run channel blanks
- Check for over/undershoot in the plate system
- Retry performance check. If results are still poor, contact ChemWell support

4.4.1.1 Laboratory Information System (LIS)

The ***ELISYS UNO*** Laboratory Information System (LIS) provides a method, or protocol, to allow for ease of information exchange between two systems. The patient information from external sources can be easily uploaded into our patient database. This database will contain patient information and tests requested. Upon job completion the patient information and assay results can be downloaded into a text file following the same protocol. The protocol for data exchange is listed below.

- **Import Process:**
  - Select Management > **LIS Import**
  - Choose a file containing LIS requests.
  - Requested tests are added automatically to request list in the Sample tab.
- **Export Process:**
  - In the Report tab, user will select records and press Export button.
  - In the Save-As Type drop down list, the user will select LIS files (*.lis). User types in a filename, and a folder, for the file and presses Save button.

Record Definitions and Specifications

Record Type Definitions	
H|	**Indicates a Header Record, primarily for informational purposes.**
P|	**Indicates a Patient Record and is patient specific information.**
OBR|	**Indicates a Requested Assay to be run for the preceding patient.**
OBX|	**Results from the Requested Assay preceding.**
L|	**Indicates the End of the file.**
A|	**Append this information to the preceding record; may be used on any record.**

Figure 4.4.1-2 Record Type Definitions

A Carriage return is used to indicate the end of the line (220 is the maximum).

Record Layout Specifications
Minimum Requirements

Message Header													
H|													
Append to the Previous Record													
A|													
Patient Segment													
P|	Transmission Seq#|	Patient-ID|	|	|	Patient Name|	|	|	Sex|	|	Address|	|	|	Doctor
Observation Order Segment													
OBR|	Sequence Number|	|	|	Assay Name								
Result Observation Segment													
OBX|	Sequence Number|	Value Type|	|	Observation Value |	Units |	Reference Range |	Abnormal Flags |	|	Nature of abnormal checking			
Message Terminator													
L|	Sequence Number|	|	Patient Count |	Line Count |	Batch Number								

Note: A solid bar (|) indicates the field is for future use. The bar delimiter is necessary for correct formatting within the record.

```
H|^~\&|||||||||P|A.2|200502231044
P|1|123783479|||Doe^John
OBR|1|||Example Albumin
OBR|2|||Example Cholesterol
OBR|3|||Example Glucose
P|2|239393850|||Smith^Betty
OBR|1|||Example Albumin
OBR|2|||Example Cholesterol
OBR|3|||Example Glucose
P|3|450862376|||Jones^David
OBR|1|||Example Albumin
OBR|2|||Example Cholesterol
OBR|3|||Example Glucose
L|||3|14
```

Figure 4.4.1-3 Import File Example
(.LIS file extension)

```
H|^~\&|||||||||P|A.2|200504121156
P|1|123783479|||Doe^John^||||||||
OBR|1|||Example Albumin
OBX|1|ST||4.0|g/dL|3.5 - 5.2||
OBR|2|||Example Cholesterol
OBX|2|ST||137.2|mg/dL|< 200.0||
OBR|3|||Example Glucose
OBX|3|ST||95.3|mg/dL|70.0 - 110.0||
P|2|239393850|||Smith^Betty^||||||||
OBR|1|||Example Albumin
OBX|1|ST||3.3|g/dL|3.5 - 5.2|Low|
OBR|2|||Example Cholesterol
OBX|2|ST||119.3|mg/dL|< 200.0||
OBR|3|||Example Glucose
OBX|3|ST||75.2|mg/dL|70.0 - 110.0||
P|3|450862376|||Jones^David^||||||||
OBR|1|||Example Albumin
OBX|1|ST||3.9|g/dL|3.5 - 5.2||
OBR|2|||Example Cholesterol
OBX|2|ST||130.9|mg/dL|< 200.0||
OBR|3|||Example Glucose
OBX|3|ST||126.8|mg/dL|70.0 - 110.0|High|
L|||3|23
```

Figure 4.4.1-4 Export File Example
(.LIS file extension)